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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/761,033	01/16/2001	Yang Gao	10508/998RSS366	4236
25700	7590	04/29/2005		EXAMINER
				JACKSON, JAKIEDA R
			ART UNIT	PAPER NUMBER
			2655	

DATE MAILED: 04/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/761,033	GAO, YANG	
	Examiner	Art Unit	
	Jakieda R Jackson	2655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
 THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 13 December 2004.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 28,29,31-35,38,39 and 41-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 28,29,31-35,38,39 and 41-45 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

Response to Amendment

1. In response to the Office Action mailed November 2, 2004, applicant submitted an amendment filed on December 13, 2004, in which the applicant requested reconsideration with respect to **claims 28-29 and 38-39**.

Response to Arguments

2. Applicant swore behind the effective filing date of Oshikiri, i.e. September 28, 1999, under 37 C.F.R. § 1.131. The inventor under the claimed invention has submitted an appropriate declaration to overcome the reference.

Therefore, Applicant's arguments, see pages 5-8, filed December 13, 2004, with respect to claims 28-29 and 38-39 have been fully considered and are persuasive. The rejections of claims 28-29 and 38-39 have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Thyssen and Swaminathan.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 28-29 and 38-39** are rejected under 35 U.S.C. 102(b) as being anticipated by Swaminathan (USPN 5,495,555).

Regarding **claims 28 and 38**, Swaminathan discloses a method and an encoder of encoding a speech signal, comprising:

processing said speech signal to generate a plurality of frames, wherein each of said plurality frames includes a plurality of subframes (speech frames are divided into subframes; column 8, lines 51-52);

coding a previous subframe of said plurality of subframes using Code-Excited Linear Prediction (CELP; column 1, line 46 – column 2, line 4) to generate a previous excitation signal (column 12, lines 40-65); and

applying short term enhancement using said previous excitation signal (previous) to enhance a current excitation signal for a current subframe (current; column 12, lines 40-56 with column 10, lines 38-65 with column 8, line 66 – column 9, line 22).

Regarding **claims 29 and 39**, Swaminathan discloses a method and encoder wherein said short term enhancement is achieved by using several pulses from said previous excitation signal (past excitation samples) to generate one or more short term enhancement pulses based on short term correlation (short term; column 10, lines 38-65 with column 8, line 66 – column 9, line 22).

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5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. **Claims 28-29, 31-32, 34, 38-39, 41-42 and 44** are rejected under 35 U.S.C. 102(e) as being anticipated by Thyssen (USPN 6,813,602).

Regarding **claims 28 and 38**, Thyssen discloses a method and an encoder of encoding a speech signal, comprising:

processing said speech signal to generate a plurality of frames, wherein each of said plurality frames includes a plurality of subframes (speech frame is divided into subframes; column 9, line 40);

coding a previous subframe of said plurality of subframes using Code-Excited Linear Prediction (CELP; column 8, lines 45-49) to generate a previous excitation signal (excitation signal; column 9, lines 1-7); and

applying short term enhancement (short-term) using said previous excitation to enhance a current excitation signal for a current subframe (column 9, lines 1-7).

Regarding **claims 29 and 39**, Thyssen discloses a method and encoder wherein said short term enhancement is achieved by using several pulses from said previous

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excitation signal (past excitation) to generate one or more short term enhancement pulses based on short term correlation (shorter pitch lag; column 22, lines 26-63).

Regarding **claims 31 and 41**, Thyssen discloses a method and encoder wherein said short term enhancement is achieved by weighting said previous signal by a current weighting filter (figure 2, elements 219 or 251 with column 6, lines 56-57) to estimate correlation peaks at a distance (estimates of the pitch lag; column 13, lines 54-57).

Regarding **claims 32 and 42**, Thyssen discloses a method and encoder wherein said short term enhancement determines less than five peaks (two pitch lags; column 14, lines 5-15) and gains per sub-frame from said previous excitation signal (two gains; column 11, lines 1-3).

Regarding **claims 34 and 44**, Thyssen discloses a method and encoder wherein gains and distances are calculated by maximizing correlations (maximizing correlations) of previous excitation signals (past excitation) in a weighted speech domain (weighting; column 22, lines 26-63).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 31, 33-35, 41 and 43-45** are rejected under 35 U.S.C. 103(a) as being unpatentable over Swaminathan in view of Akamine et al. (U.S. Patent No. 5,265,167), hereinafter referenced as Akamine.

Regarding **claims 31 and 41**, Swaminathan discloses a method and an encoder for encoding a speech signal (column 1, lines 11-15), but lacks the method and encoder wherein said short term enhancement is achieved by weighting said previous excitation signal by a current weighting filter to estimate correlation peaks at a distance.

Akamine discloses the method and encoder wherein said short term enhancement is achieved by weighting said previous excitation signal (excitation signal generator; figure 19, element 17) by a current weighting filter (weighting filter; figure 19, elements 51 and 52), to estimate correlation peaks at a distance.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Swaminathan's invention such that it weighs the previous excitation signal by a current weighting filter, to reduce that amount of

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calculations required for coding the pulse train of the excitation signal while maintaining the performance (column 19, lines 10-14).

Regarding **claims 33 and 43**, Swaminathan discloses a method and an encoder for encoding a speech signal, but lacks the method wherein said current excitation signal pattern is constructed using the recited equation.

Akamine does not specifically disclose the method wherein said current excitation signal pattern is constructed using the recited equation. However, these formulas are well-known obvious variants of Akamine's equation 37 (column 14, line 61 – column 15, line 9).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Swaminathan's invention such that it discloses the recited equation, to decode and compress a signal with high efficiency and to maintain a low transfer bit rate based on a train of excitation pulses (column 1, lines 10-16).

Regarding **claims 34 and 44**, Swaminathan discloses a method and an encoder for encoding a speech signal, but lacks the method wherein gains and distances are calculated by maximizing correlations of previous excitation signals in a weighted speech domain.

Akamine discloses a method wherein gains (gain) and distances (length; column 14, lines 61-68) are calculated by maximizing correlations (column 21, lines 23-32) of previous excitation signals (previous frame) in a weighted speech domain (column 3, lines 14-20 with column 12, lines 34-44), to reduce the amount of calculations.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Swaminathan's invention such that the gains and distances are calculated by maximizing correlations of previous excitation signals in a weighted speech domain, to provide a speech coding apparatus capable of providing high-quality synthesized speech at a low transfer rate (column 4, lines 24-27).

Regarding **claims 35 and 45**, Swaminathan discloses a method and an encoder for encoding a speech signal, but lacks the method wherein short term enhanced excitation is generated by performing a convolution operation $P(n)$ with said previous excitation signal.

Akamine discloses the method wherein short term enhanced excitation (figure 19 with pulse train approximately $\frac{1}{2}$; column 19, lines 8-14) is generated by performing a convolution operation $P(n)$ (convolution sum) with said previous excitation signal (previous frame; column 9, line 56 – column 10, line 6 and column 19, lines 53-63), to calculate the perceptual-weighted error signal.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Swaminathan's invention such that it generates short term enhancement pulses by performing a convolution operation, to reduce the amount of calculations needed, which allows the practical use of the device to be further facilitated and efficient (column 19, lines 63-68).

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9. **Claims 32 and 42** are rejected under 35 U.S.C. 103(a) as being unpatentable over Swaminathan in view of Akamine et al., as applied to claim 31 above, in further view of McDonough et al. (U.S. Patent No. 5,926,786), hereinafter referenced as McDonough.

Regarding **claims 32 and 42**, Swaminathan in view of Akamine discloses a method and an encoder for encoding a speech signal, but lacks specifically teaching wherein said short term enhancement determines less than five peaks and gains per each sub-frame from said previous excitation signal.

McDonough discloses a speech compression system wherein said short term enhancement (column 12, lines 19-21) determines less than five (2.0) peaks (pitch lag) and gains (pitch gain) per each sub-frame from said previous excitation signal (column 26, lines 1-7), to allow computational savings to be achieved.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Swaminathan in combination with Akamine's method wherein said short term enhancement determines less than five peaks and gains per each sub-frame from said previous excitation signal, in order to minimize the mean square errors in each pitch subframe (column 25, lines 62-64), to prevent mathematical constraints (column 3, lines 30-46).

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jakieda R Jackson whose telephone number is 571.272.7619. The examiner can normally be reached on Monday through Friday from 7:30 a.m. to 5:00p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on 571.272.7593. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JRJ
April 27, 2005



DAVID L. OMETZ
PRIMARY EXAMINER